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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
AHN, SAM K

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,013	SANTHOFF ET AL.	
	Examiner	Art Unit	
	Sam K. Ahn	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 2-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 2-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 April 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claim 9 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2,3,5,6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards et al. US 2002/0075972 A1 (Richards '972) in view of Fullerton US 6,549,567 B1 (Fullerton '567) and Molisch et al. US 2004/0198260 A1 (Molisch). Regarding claim 9, Richards '972 teaches an ultra-wideband communication system (see Figs. 6 and 7 of a transmitter and of a receiver of an impulse radio communications utilizing ultra wide band technology, note paragraph 0006, 0159 and 0166) comprising: an ultra-wideband transmitter (transmitter in Fig.6) structured to transmit a training set of ultra-wideband pulses (training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006); and an ultra-wideband receiver (see Fig.16 and note paragraph 0277, the receiver receiving

the plurality of impulses) structured to receive the training set of ultra-wideband pulses (note paragraph 0277, wherein the received impulses comprises the training sequence transmitted, note paragraph 0276).

And although Richards '972 teaches the transmitter and the receiver transmitting and receiving through a wireless medium via antennas (624 in Fig.6 for transmitting and 704 in Fig.7 for receiving) and suggests that wire or cable can be implemented for a communications interface between a computer and an external device (note paragraph 0309), Richards '972 does not explicitly teach wherein the wire medium is implemented between the transmitter and the receiver.

Fullerton '567 teaches, in the same field of endeavor, ultra-wideband transmitter (904 in Fig.9) and ultra-wideband receiver (912 in Fig.9) transmitting and receiving, respectively, an ultra-wideband signal (504 in Fig.5, note col.8, lines 17-18, ultrawide-band impulse radio signal) through a wire medium (note col.10, lines 12-15 medium cable). Hence, both Richards '972 and Fullerton '567 teach ultra wide-band transmitter and receiver transmitting and receiving the ultra wide-band signal, and further, Fullerton '567 suggests that ultra wide-band signal can be implemented in a wire medium between the transmitter and the receiver, as previously explained. One skilled in the art would further recognize through implementation of wire medium, the receiver would suffer less of noise or interference of fading types, which is well-known in the art to be experienced in a wireless environment. On the other hand, one skilled in the art would further recognize that a wireless environment allows the transmitter and receiver to be mobile. Therefore, it would have been obvious to one

skilled in the art at the time of the invention to recognize that the transmitter and the receiver of Richards '972 (see Figs. 6 and 7 of a transmitter and of a receiver of an impulse radio communications utilizing ultra wide band technology, note paragraph 0006, 0159 and 0166) communicate through a cable medium as suggested by Fullerton '567 (note col.10, lines 12-15 medium cable).

And although Richards '972 teaches an ultra-wideband communication system (see Figs. 6 and 7 of a transmitter and of a receiver of an impulse radio communications utilizing ultra wide band technology, note paragraph 0006, 0159 and 0166) comprising: an ultra-wideband transmitter (transmitter in Fig.6) structured to transmit a training set of ultra-wideband pulses (training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006); and an ultra-wideband receiver (see Fig.16 and note paragraph 0277, the receiver receiving the plurality of impulses) structured to receive the training set of ultra-wideband pulses (note paragraph 0277, wherein the received impulses comprises the training sequence transmitted, note paragraph 0276), however, Richards '972 in view of Fullerton '567 do not explicitly teach wherein the ultra-wideband receiver contains information about the training set, and after receiving the training set, responds to the ultra-wideband transmitter with information relating to which of the ultra-wideband pulses in the training set was received in a form that is most similar to a transmitted form.

Molisch teaches in figure 2 of a communication between a transmitter and a receiver in a ultra-wideband system wherein the receiver (220) after receiving the training set (via 226 in Fig.2), responds to the ultra-wideband transmitter with information relating to which of the ultra-wideband pulses in the training set was received in a form that is most similar to a transmitted form (note paragraphs 0035 and 0041). Molisch teaches this allows the system to avoid noisy frequency range (note paragraph 0035). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Molisch in the system of Richards '972 and Fullerton '567 of communicating between the transmitter and the receiver for the purpose of avoiding noisy frequency range (note paragraph 0035).

Regarding claim 2, Richards '972 further teaches wherein each of the ultra-wideband pulses comprising the training set (training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006) comprise a pulse of electromagnetic energy (see waveform 102 in Fig.1A of the impulse signal or pulse) having a duration that can range from about 10 picoseconds to about 10 milliseconds (note paragraph 0117 wherein each pulse of the plurality of impulses transmitted have a length of 0.5 nanosecond, which is within the range from about 10 picoseconds to about 10 milliseconds).

Regarding claim 3, Richards '972 further teaches wherein each of the ultra-wideband pulses comprising the training set (training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006) comprise a pulse of electromagnetic energy (see waveform 102 in Fig.1A of the impulse signal or pulse) having a duration that can range from about 10 picoseconds to about 10 milliseconds (note paragraph 0117 wherein each pulse of the plurality of impulses transmitted have a length of 0.5 nanosecond, which is within the range from about 10 picoseconds to about 10 milliseconds) and a power that can range from about +30 power decibels to about -60 power decibels, as measured at a single radio frequency (see Fig.1B wherein power measurement at the vicinity of 0 MHz is nearly –32 dB, which is within the range from about +30 power decibels to about -60 power decibels).

Regarding claim 5, Richards '972 further teaches wherein the ultra-wideband transmitter (transmitter in Fig.6) comprises an ultra-wideband pulse modulator (note paragraph 0161 wherein the transmitter comprises timing generator 608, code source 612 along with internally generated subcarrier signal to generate modulated signal 618) that is structured to transmit a multiplicity of ultra-wideband pulses

(training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006).

Regarding claim 6, Richards '972 further teaches wherein the ultra-wideband receiver (see Fig.7) comprises an ultra-wideband pulse demodulator (710,713,732 correlating the received signal and demodulating) that is structured to receive a multiplicity of ultra-wideband pulses (receiving the training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richards et al. US 2002/0075972 A1 (Richards '972) in view of Fullerton US 6,549,567 B1 (Fullerton '567) and Molisch et al. US 2004/0198260 A1 (Molisch) and in further view of Pendergrass et al. US 2002/0191690 A1 (Pendergrass).

Regarding claim 4, Richards '972 in view of Fullerton '567 and Molisch teach the training set (training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology,

note paragraph 0006), however, do not explicitly teach at least one ultra-wideband pulse selected from a group consisting of: a pre-distorted pulse, a pre-emphasized pulse, a shaped pulse, a substantially triangular pulse, a substantially square pulse, a pulse occupying a portion of a radio frequency spectrum, with a segment of the occupied radio frequency spectrum substantially eliminated; and a pulse occupying a portion of a radio frequency spectrum, with a segment of the occupied radio frequency spectrum amplified.

Pendergrass teaches, in the same field of endeavor, generation of ultra-wideband pulse (822 in Fig.8 Pulse Generator in an impulse transmission ultra wideband transmitter, note paragraph 0106) at least one ultra-wideband pulse selected from a group consisting of: a pre-distorted pulse, a pre-emphasized pulse, a shaped pulse, a substantially triangular pulse, a substantially square pulse, a pulse occupying a portion of a radio frequency spectrum, with a segment of the occupied radio frequency spectrum substantially eliminated; and a pulse occupying a portion of a radio frequency spectrum, with a segment of the occupied radio frequency spectrum amplified (generating a square wave pulse type, as well as other pulse types, note paragraph 0106). Hence, Richards '972, Fullerton '567 and Pendergrass teach generation of ultra-wideband pulse, and Pendergrass further suggests that the ultra-wideband pulse is of square wave pulse type. It is well-known to one skilled in the art that square wave pulse type is less complicated to generate, also note paragraph 0412 of Richards et al. US 2002/0061081 A1. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of

Pendergrass in the system of Richards '972 by implementing the square wave pulse type in the pulse generator of Richards '972 (622 in Fig.6) for the purpose of generating the training set of ultra-wideband pulses (training sequence of impulse or training sequence of ultra wide band pulses, note paragraph 0008 and 0275, is transmitted in a plurality of frames with an impulse, wherein the impulse is transmitted using the ultra wide band technology, note paragraph 0006) with less complicated logic, as previously explained.

4. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richards et al. US 2002/0075972 A1 (Richards '972) in view of Fullerton US 6,549,567 B1 (Fullerton '567) and Molisch et al. US 2004/0198260 A1 (Molisch) and in further view of Fullerton US 5,677,927 (Fullerton '927).

Regarding claim 7, Richards '972 in view of Fullerton '567 and Molisch teach all subject matter claimed, as applied to claim 9. And although Fullerton '567 teaches the wire medium (note col.10, lines 12-15 medium cable), do not explicitly teach wherein the wire medium is selected from a group consisting of: an optical fiber ribbon, a fiber optic cable, a single mode fiber optic cable, a multi-mode fiber optic cable, a twisted pair wire, an unshielded twisted pair wire, a plenum wire, a PVC wire, a coaxial cable, and an electrically conductive material.

Fullerton '927 teaches wherein the wire medium is a coaxial cable (note col.13, lines 3-21 wherein the coaxial cable is implemented to transmit ultra wideband signals). Fullerton further suggests that through this implementation, antennas in the

transmitter and the receiver is eliminated. One skilled in the art at the time of the invention would further recognize through implementation of coaxial cable as the wire medium, the receiver would suffer less of noise or interference of fading types, which is well-known in the art to be experienced in a wireless environment and would not be necessary to implement antennas in the system. On the other hand, one skilled in the art would further recognize that a wireless environment allows the transmitter and receiver to be mobile. Therefore, it would have been obvious to one skilled in the art at the time of the invention to recognize that the transmitter and the receiver of Richards '972 (see Figs. 6 and 7 of a transmitter and of a receiver of an impulse radio communications utilizing ultra wide band technology, note paragraph 0006, 0159 and 0166) communicate through a coaxial cable as the cable medium as for the purpose of eliminating the antennas in the system, as taught by Fullerton '927 (note col.13, lines 3-21 wherein the coaxial cable is implemented to transmit ultra wideband signals).

Regarding claim 8, Richards '972 in view of Fullerton '567 and Molisch teach all subject matter claimed, as applied to claim 9. And although Fullerton '567 teaches the wire medium (note col.10, lines 12-15 medium cable), do not explicitly teach wherein the wire medium is selected from a group consisting of: a power line, an optical network, a cable television network, a community antenna television network, a community access television network, a hybrid fiber coax system network, a public switched telephone network, a wide area network, a local area network, a

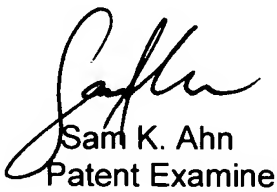
metropolitan area network, a TCP/IP network, a dial-up network, a switched network, a dedicated network, a nonswitched network, a public network and a private network.

Fullerton '927 teaches wherein the wire medium is implemented in a local area network (note col.12, line 67 – col.13, line 21 wherein the medium cable is implemented to transmit ultra wideband signals in the local area network). One skilled in the art at the time of the invention would further recognize through implementation of the medium cable in the local area network, the receiver would suffer less of noise or interference of fading types, which is well-known in the art to be experienced in a wireless environment and would not be necessary to implement antennas in the system. On the other hand, one skilled in the art would further recognize that a wireless environment allows the transmitter and receiver to be mobile. Therefore, it would have been obvious to one skilled in the art at the time of the invention to recognize that the transmitter and the receiver of Richards '972 (see Figs. 6 and 7 of a transmitter and of a receiver of an impulse radio communications utilizing ultra wide band technology, note paragraph 0006, 0159 and 0166) communicate through the medium cable in the local area network using local area network cables as suggested by Fullerton '927 (note col.12, line 67 – col.13, line 21 wherein the medium cable is implemented to transmit ultra wideband signals in the local area network).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sam K. Ahn
Patent Examiner

7/21/07